

CLAIMS:

1. A data processing apparatus, programmed to execute a program of instructions, the program being arranged to cause the processing apparatus to issue sequentially a first number of identical, conditionally executable, non-branching instructions for causing the processing apparatus to perform a second number of operations, each 5 operation on a respective data-item, the first number being larger than the second number, the data processing apparatus selecting which one, or ones, of the issued conditionally executable instructions cause the operation or operations on said data-items to be performed, said selecting being dependent on data processed by the apparatus.
- 10 2. A data processing apparatus according to Claim 1, the conditionally executable instructions each having a first and a second operand, the first operand referring to a first storage location for storing the data-item on which the operation is to be performed, the second operand referring to a second storage location where a signal is stored that indicates whether the first storage location stores a newly valid data-item, said selecting 15 being dependent on the signal.
3. A data processing apparatus according to Claim 2, wherein the program contains further instructions, for storing the data-items and the signals for use by the conditionally executable instructions in the first and second storage locations respectively.
- 20 4. A data processing apparatus according to Claim 3, comprising a functional unit for executing the further instructions, the functional unit generating each data-item together with the corresponding signal, the functional unit having outputs for writing the data-item and the signal to the first and second storage location respectively.
- 25 5. A data processing apparatus according to Claim 1, the program comprising a program loop that is executed the first number of times, the program loop containing a copy of the conditionally executable instruction, said copy being issued the first number of times during execution of the program loop.

6. A data processing apparatus according to Claim 1, the program being arranged
to cause the processing apparatus to issue further instructions each with an operand that refers
to a storage location, the further instructions making sequential updates to a state represented
5 by a content of said storage location, each conditionally executable instructions being
completely executed when the state has a predetermined state value during execution of that
conditionally executable instruction.

7. A data processing apparatus according to Claim 4, comprising a functional
10 unit that has an internal state, which is sequentially updated under control of the further
instructions, the functional unit setting the signal dependent on whether or not the state has
reached a predetermined state value.

8. A data processing apparatus comprising
15 - a first functional unit arranged to write a data-item and a signal indicating whether or not
that data-item is a newly valid data-item to a first and second operand storage location
respectively, in response to a first type of instruction;
- a second functional unit arranged to execute conditionally a second type of instruction,
which is a non-branching instruction, the second type of instruction having a first and second
20 operand capable of addressing the first and second operand storage location respectively, the
second functional unit executing an operation commanded by the second type of instruction
on a content of the storage location addressed by the first operand, conditionally, dependent
on a content of the storage location addressed by the second operand.

25 9. A data processing apparatus according to Claim 8, the first functional unit
being arranged to sequentially update an internal state in response to sequential instructions
of the first type, the first functional unit being arranged to set the signal to a value indicating
that the data-item is newly valid when the internal state has reached a predetermined value.

30 10. A method of using a data processing apparatus to execute operations or an
operation, each operation on a respective data-item, the method comprising
- sequentially issuing a first number of identical, conditionally executable, non-branching
instructions;

-- run-time selecting which one, or ones, of the issued conditionally executable instructions cause the operation or operations on said data-items to be performed, said selecting being dependent on data processed by the apparatus, whereby a second number, smaller than the first number, of operations is completely executed.

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11. A method according to Claim 10, wherein the conditionally executable instructions have a first and a second operand, the first operand referring to a first storage location for storing the data-item on which the operation is to be performed, the second operand referring to a second storage location where a signal is stored that indicates whether the first storage location stores a newly valid data-item, said run-time selecting being dependent on the signal stored in the second storage location.

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12. A computer program product comprising a computer program for executing operations or an operation, the program being arranged to cause a data processing apparatus to

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- sequentially issue a first number of identical, conditionally executable, non-branching instructions;
- run-time select which one, or ones, of the issued conditionally executable instructions cause the operation or operations on said data-items to be performed, said selecting being dependent on data processed by the apparatus, whereby a second number, smaller than the first number, of operations is completely executed.

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13. A computer program product according to Claim 12, wherein the conditionally executable instructions have a first and a second operand, the first operand referring to a first storage location for storing the data-item on which the operation is to be performed, the second operand referring to a second storage location where a signal is stored that indicates whether the first storage location stores a newly valid data-item, said run-time selecting being dependent on the signal stored in the second storage location.

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14. A computer program product according to Claim 12, comprising a program loop that contains a copy of the conditionally executable instruction, the program being arranged to cause the processing apparatus to issue the copy the first number of times during execution of the program loop.